IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: NYGREN et al.

Title: DEVICES AND METHODS FOR OPTICAL DETECTION OF NUCLEIC ACID HYBRIDIZATION

Appl. No.: Unassigned

Filing Date: Herewith

Examiner: Unassigned

Art Unit: Unassigned

CERTIFICATE OF EXPRESS MAILING
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DIANE GARCIA
(Printed Name)

Diane Garcia
(Signature)

PRELIMINARY AMENDMENT

Commissioner for Patents
Box Patent Application
Washington, D.C. 20231

Sir:

In connection with the continuing application filed herewith, please enter the following amendments and consider the following remarks:

In the Specification:

Please cancel the first paragraph on Page 1 of the parent specification, Application No. 09/425,072, and substitute the following:

This application is a divisional of co-pending application Serial No. 09/425,072 filed October 21, 1999, which is a continuation of co-pending application Serial No. 08/375,151 filed January 17, 1995, which is a continuation-in-part of U.S. Serial No. 07/965,661, filed September 17, 1992, now abandoned, which is a continuation of U.S. Serial No. 07/260,317 filed October

25, 1986, now abandoned, which is entitled to foreign priority from West German Application No. P3506703.9-52 filed February 26, 1985, entitled "A Method of Sequence Analysis of Nucleic Acids in Particular Deoxyribonucleic Acid (DNA) and Ribonucleic Acid (RNA), As Well As A Support for Performing the Method and A Method for Producing the Support," each of which is hereby incorporated in their entirety herein, including all drawings, tables, and claims.

In the Claims:

Please cancel all currently pending claims provided in the original specification and enter the following new claims. These new claims are reflected in the specification filed herewith.

20. A support for use in detecting the presence of a target nucleic acid comprising an optically smooth, flat light-reflecting surface, said surface having a nucleic acid complementary to said target nucleic acid bound thereto.

21. The support according to claim 20, wherein said nucleic acid bound to said surface is bound by covalent bonding.

22. The support according to claim 20 comprises silicon or glass.

23. The support according to claim 20, wherein said light reflecting surface comprises a layer of aluminum or silicon.

24. The support according to claim 23, wherein said layer of aluminum or silicon is a layer of a compound selected from the group consisting of silicon dioxide, silicon monoxide, and aluminum oxide.

25. The support according to claim 24, wherein said support further comprises an anti-reflection layer.

26. The support according to claim 20 wherein said nucleic acid bound to said surface is indirectly bound through an intermediate molecule bound to said surface.

27. The support according to any one of claims 20-26, wherein said support further comprises said target nucleic acid bound to said complementary nucleic acid, wherein reflectance from said

~~27.~~ 26. The support according to any one of claims 20-26, wherein said support further comprises said target nucleic acid bound to said complementary nucleic acid, wherein reflectance from said light-reflecting surface is altered in comparison to reflectance by said light-reflecting surface in the absence of said bound target nucleic acid.

Remarks:

The new Specification submitted herewith is the same Specification filed with U.S. Application No. 09/425,072. However, Applicant has amended the Cross-Reference to Related Patent Applications section on Page 1 of the Specification and has written new claims which are now included as Page 46. The new Specification contains all of these amended pages and therefore marked-up pages have not been included.

The present invention relates to supports for use in detecting the binding of a target nucleic acid to its complement. The surfaces comprise an optically smooth, flat light-reflecting surface to which the complementary nucleic acid is bound. Applicants respectfully request consideration of the claims in view of the foregoing amendments and the following remarks.

Applicants have cancelled the claims as filed, and added new claims 20-26. These claims represent subject matter cancelled from U.S. Patent Application No. 09/425,072. In that application, the Examiner had rejected subject matter corresponding to the newly entered claims as allegedly being anticipated by U.S. Patent No. 4,849,330 ("the '330 patent). Applicants provide the following remarks in response to that rejection.

The instant claims describe a surface comprising an optically smooth, flat light-reflecting surface to which the complementary nucleic acid is bound. The Examiner essentially contends that the surfaces described in the '330 patent are described as being smooth and desirably flat, and that all surfaces will inherently reflect light.

Applicants respectfully point out that a photoresponsive surface as described in the '330 patent must absorb light in order to function. Specifically, a photoresponsive surface functions by absorbing light photons and, if the photons have a sufficient quantum energy, ejecting electrons from the surface. Thus, the skilled artisan would seek a surface that does not reflect light, rather than utilizing the claimed support, which must reflect light.

Moreover, for a photoresponsive surface to inherently reflect light, that reflective property must be necessarily present. The mere fact that such a characteristic may occur is not sufficient to establish inherency. *See, e.g.*, MPEP §2112. Light reflectance is not an inherent property of photoresponsive surfaces. For example, the '330 patent indicates that such a surface may be silicon, and may comprise a silicon oxide coating. *See, e.g.*, '330 patent in column 2, lines 65-68, and column 3, lines 59-62. Such surfaces are often used as antireflective coatings. In this regard, the Examiner's attention is directed to U.S. Patents 6,248,606 (Exhibit A) and 6,162,588 (Exhibit B) provided herewith for the examiner's convenience. Applicants respectfully request that the Examiner provide extrinsic evidence making it clear that the missing descriptive matter, *i.e.*, that a photoresponsive surface as described in the '330 patent inherently reflects light, is necessarily present.

Applicant believes that the present application is now in condition for allowance. Favorable consideration of the application as amended is respectfully requested. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

Date October 18, 2001

By _____

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